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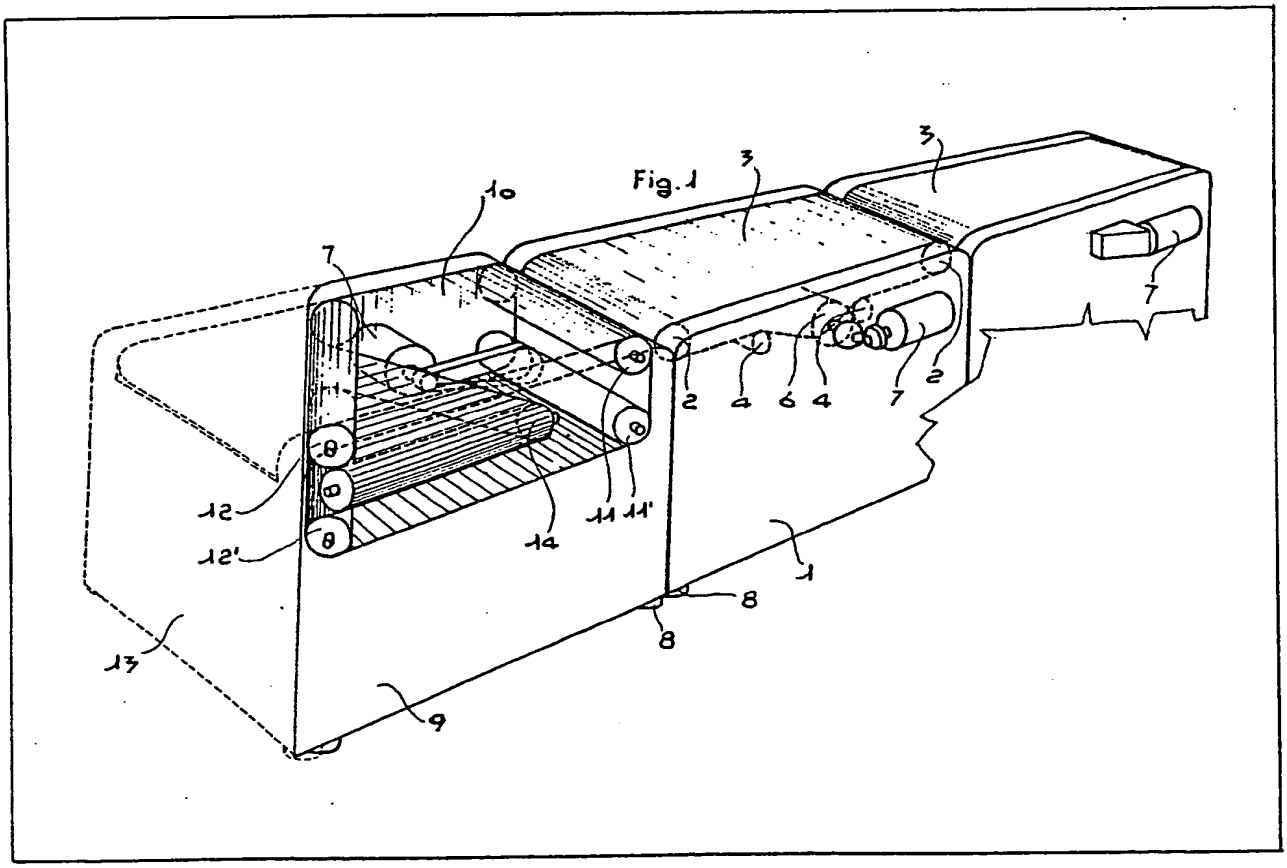
# (54) Feeding apparatus particularly for machines for the conveyance and sorting of objects

(57) Feeding or discharging apparatus for a conveyor comprises of a series of modular units, each comprising a single moving belt (3) driven by, for example, a permanent magnet direct current motor (7), so that it is possible to make each belt run at a different speed and impart to the objects an acceleration or deceleration to ensure that they move at a speed consonant with that of a conveying belt at one end of the apparatus.

In the case of change of direction on transfer of the objects, from the apparatus to the conveyor there is provided a lead element comprising a conveying belt (10) support by two pairs of rolls (11, 11' and 12, 12') which are mutually inclined and an intermediate stretching roll (14).

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The drawing originally filed was informal and the print here reproduced is taken from a later filed formal copy.

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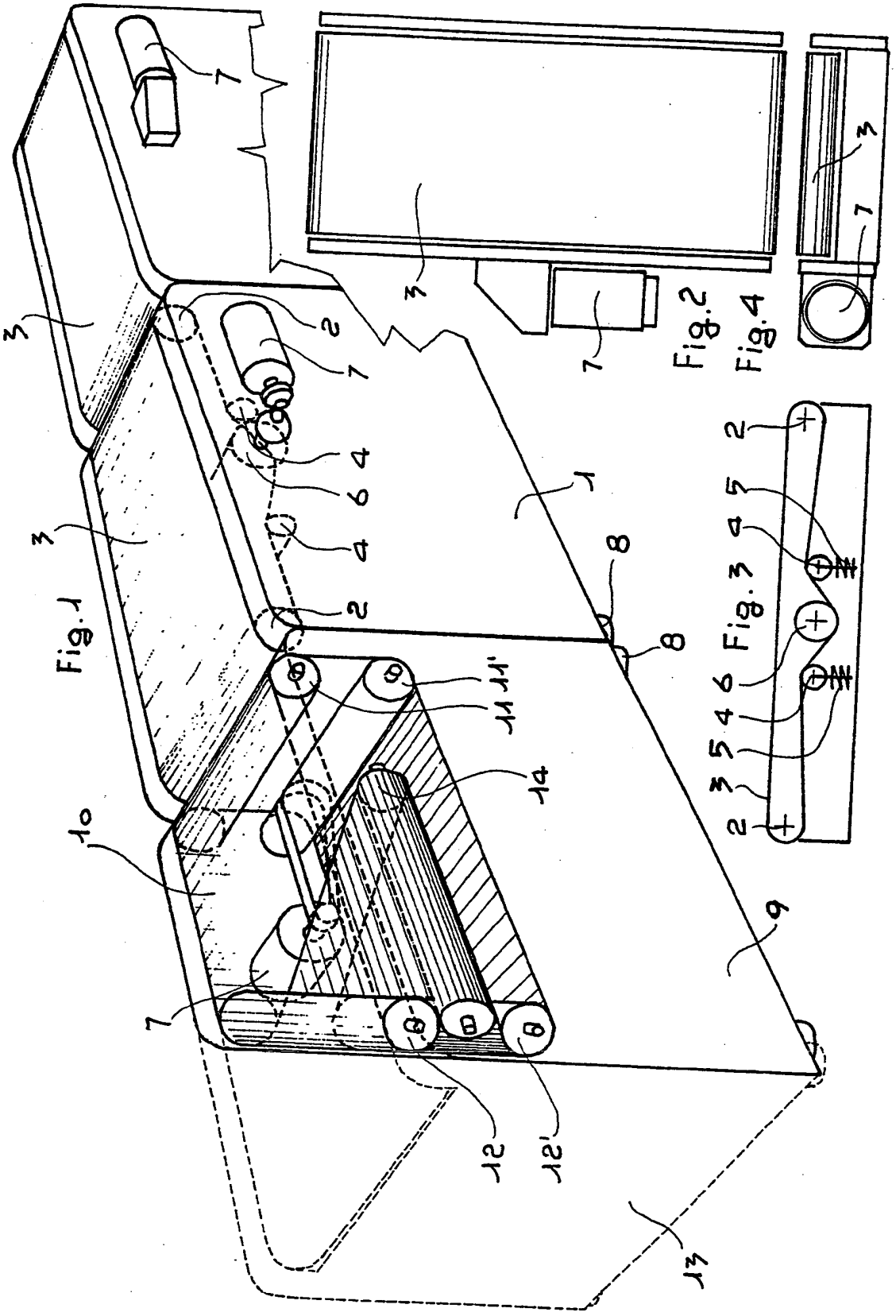


Fig.1




Fig.2




Fig.4




Fig.3

SPECIFICATION

**Feeding apparatus particularly for machines for the conveyance and sorting of objects**

The present invention provides for a feeding or discharging apparatus for conveying and sorting machines, particularly suitable for loading and unloading conveyors and other continually moving transport apparatus with objects coming to or from loading stations along the conveying belt itself.

Conveying apparatus provided with more than one loading station are used for many applications, e.g. in airports for sorting luggage, in post offices for sorting correspondence, and in the packaging industry.

Such apparatus generally consists of a main conveying belt or the like, on which the objects to be sorted are placed by means of secondary belts, in the vicinity of each loading station.

Loose rolls are located between the main belt and the secondary ones, and it often happens that some small objects do not succeed in going beyond the loose rolls.

Other inconveniences arise when the objects are unloaded from the main belt, as the latter often runs at a different speed than that of the feeding belt.

This problem makes itself particularly felt where conveyor belts are used to feed machine tools in big automatic plants.

It occurs, in fact, that only one main belt is used for feeding several machine tools, to each of which the pieces should be sent at a different speed.

It is necessary, therefore, that the speed of the objects loaded on the main belt or unloaded from it complies exactly with the speed required by each particular machine tool.

To solve the above inconveniences, the present invention provides for a feeding or discharging apparatus for conveyors comprising a number of modular units, each of which comprises an independent conveying belt, that can be run at a different speed than that of the other belts.

This makes it possible to obtain a feeding apparatus wherein the running speed of the belts at the ends of the apparatus may vary according tc the various needs.

It is possible, therefore, to obtain a principal conveying apparatus running at pre-established speed, wherein the loading and unloading of objects takes place by means of feeding devices capable of imparting to the objects accelerations or decelerations such that said objects run at the same speed as that of the main belt, when they are in the vicinity thereof.

The present invention will be now described in detail, with reference to the accompanying drawings, in which:—

Figure 1 is the partially sectioned perspective view of a feeding apparatus according to the invention;

Figure 2 is the view from above of an element of the apparatus according to the invention;

Figure 3 is a lateral section of an element of an apparatus according to the invention; and

Figure 4 is a side view at right angles to Figure 3, of an element of an apparatus according to the invention.

The apparatus comprises a series of units each having a framework or body 1 carrying a conveying belt 3 mounted on loose rolls 2. The belt 3 is kept under tension by another couple of rolls 4 pressed by springs 5, and is driven by a roll 6 actuated by a motor 7 of known type. Rolls 2 extend beyond the top of the framework 1, in order to raise the top run of the belt to allow a continuous transport on the belt of the objects to be sorted. Frameworks 1 are mounted on adjustable supports 8.

The feeding apparatus according to the invention may be provided with a head element (on the left in Figure 1) for arranging the apparatus at an angular position in respect of a main conveying belt. This element consists of a base 9, supporting a conveying belt 10 mounted on two couples of rolls (11—11′ and 12—12′) placed one on top of the other. The rolls 12 and 12′ are inclined to a head wall 13 and the rolls 11, 11′, and, between them, there is interposed a stretching roll 14 forming, in relation to wall 13, an angle which is twice as great as that formed by rolls 12 and 12′.

Motors 7 that actuate belts 3 and 10 are preferably of the permanent magnet d.c. type, since they have an extremely rapid acceleration and their speeds may be easily adjusted.

In this manner, it is possible to eliminate noisy mechanical transmission devices, and to achieve at the same time a smooth functioning and a quick response.

Thus, if the feeding apparatus is to be set at right angles to the main conveying belt, it is made up of a series of properly connected elements 1; if, instead, an angular arrangement is required, a head element 9 too is used.

By suitable adjustment of the speeds of the individual units in the series, objects fed to or from the main conveyor may be accelerated or decelerated so that at the end of the apparatus adjacent the conveyor they may be moving at a speed appropriate to smooth transition to or from a conveyor.

CLAIMS

1. A feeding or discharging apparatus for conveyors comprising a series of units for connecting a loading station to a main conveying belt, wherein each unit comprises a conveyor belt which may run at a speed different from that of the belts of adjoining units, so as to impart to the carried objects such an acceleration or deceleration as to allow said objects to be loaded on the main belt at a speed consonant with the speed of the main belt.

2. Apparatus according to claim 1, and including a head element at one end comprising a rotating belt mounted on two spaced-apart pairs

of rolls, the respective axes of the pairs being angularly located, and an intermediate stretching roll whose axis forms with that of one of the pairs an angle which is twice as great as the angle between the pairs.

3. Apparatus according to claims 1 or 2, wherein each of the belts is driven by a motor of the permanent magnet direct current type.

4. A feeding or discharging apparatus for conveyors constructed and arranged substantially as hereinbefore described and shown in the accompanying drawings.

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